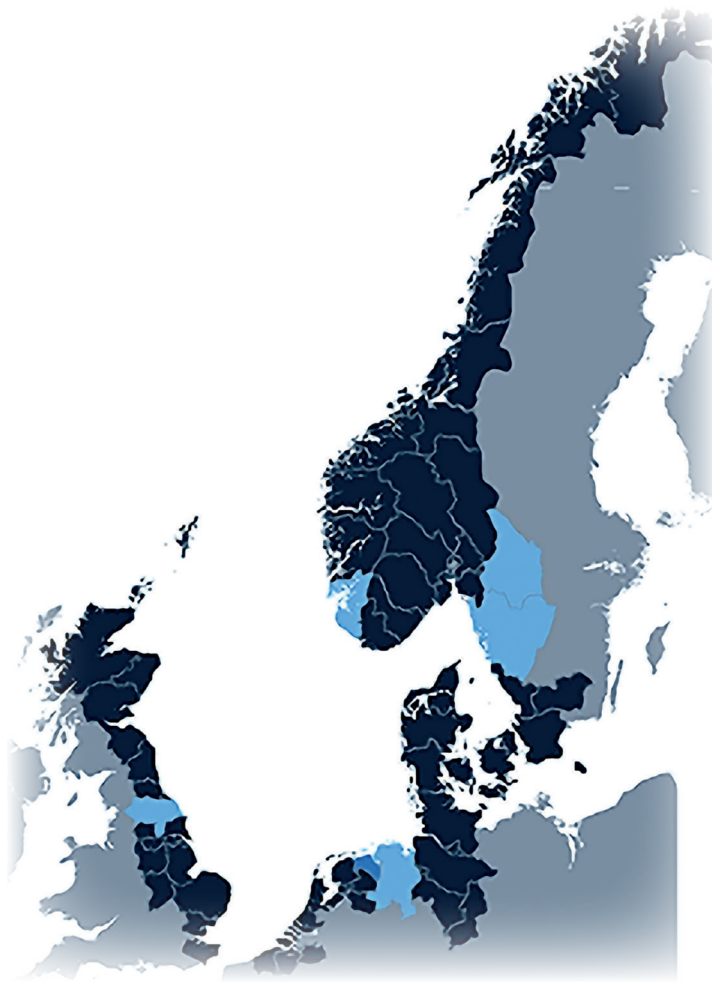


ITRACT – Policy Briefing

Sustaining accessibility and connectivity in remote rural areas: transnational issues from ITRACT



Work Package 6

Reference & Copyright

Title: POLICY BRIEFING – Sustaining accessibility and connectivity
in remote rural areas: transnational issues from ITRACT
Date: March 2015
Commissioned by: Cultural Geography Department, Faculty of Spatial Sciences,
University of Groningen, PO Box 800, 9700 AV Groningen,
The Netherlands
Authors: Koen Salemink MSC and Prof. Dr. Dirk Strijker

This report may be freely distributed and/or its contents reprinted as long as no fee is charged and the source is correctly attributed to ITRACT, a project funded by the Interreg IVB North Sea Region Programme of the European Union.

MANAGEMENT BRIEFING

This paper relies on knowledge gained from ITRACT (Improving Transport and Accessibility through new Communication Technologies), an Interreg IVB project in the North Sea Region. We will show how digital innovation to promote mobility and accessibility in rural areas is limited by poor data infrastructure and a lack of digital engagement. It is argued that these limitations perpetuate the remoteness of these areas.

Advanced digital connectivity is required for innovation and the reduction of economic and social disparities, but the potential benefits are constrained by an ongoing urban-rural digital divide in northwestern Member States of the EU. Overall, rural areas lack the required digital connectivity which is needed to make use of advanced ICT solutions and *ICT-based transport and mobility services*. Some countries, however, show more worrying patterns than others (the UK being the least connected).

In addition, ITRACT has shown that offering people devices and applications is not sufficient to assist them in becoming digitally included. For digital non-users to make the step towards digital engagement, the ICT device or application must have relevance to their everyday lives and routines.

From a market rationale, digital connectivity requires a supply-side boost whereas digital inclusion requires a demand-side boost. In order to improve digital infrastructure and enable ICT-based innovations, investment in telecommunications networks must be stimulated. Bundling the scattered and fragmented demand in rural areas is a first step, which should be followed by match funding to overcome the investment gap. Since market formation is lacking in rural areas, they are eligible for government funding. In relation to digital inclusion projects, a solution could be to shift the focus from merely offering people new devices and applications to an integral user-empowerment scheme targeted at different groups and offering an accessible introduction to ICTs. At the same time, these target group schemes should enable people to discover their own ICT-related interests, as personal drivers are key factors in becoming digitally engaged and included.

Recommendations are given for a *rural-based approach* in order to better govern specific rural issues. Moreover, for projects to remain focused on rural areas and their challenges, the project area should only consist of the (remote) rural. All of the stakeholders involved in such an area should be part of the project organization. In this way, organizations and authorities, which are often urban-based, are forced to *think from the rural perspective* and focus their project efforts merely on that area, preventing them from evading the complex



challenges faced by the rural. Moreover, it can prevent projects from using money labelled for rural areas to achieve quick wins in (peri)-urban areas. Integrated project alliances, merely serving the remote rural, fit the reformed EU Cohesion Policy, which now calls for *community-led local development* (CLLD). The Dales Integrated Transport Alliance (DITA), a partner in ITRACT, is discussed as an example for future project structures.

The lessons learned from ITRACT are useful for both transport-related projects and projects in other fields dealing with rural challenges. With economic policies becoming ever more urban-led, including EU Cohesion Policy, it is essential for rural stakeholders to join forces and work towards a *rural community-led development scheme* in their respective region. Rural communities should define their own needs, whether economic, social, cultural or environmental. Institutional rural stakeholders should facilitate developments which contribute to fulfilling these needs. In this way, rural communities can take charge of the task of overcoming ‘the rural penalty’ and local knowledge can be used for ‘tailored’ policymaking.

Table of contents

1	Introduction	1
2	Accessibility, connectivity and mobility in the digital age	3
3	Improving rural digital connectivity: a ‘minor’ issue?.....	7
4	Research approach and methodology	9
5	Restricted innovations: digitalization on the wrong side of the digital divide	11
5.1	Digitalizing accessibility in the regions	11
5.2	Digitalizing the public transport authorities.....	12
5.3	ITRACT: Two major challenges and their consequences	12
6	Integral and focused: rescaling ‘the rural’ as a solution to fragmented rural interest	15
7	References.....	19

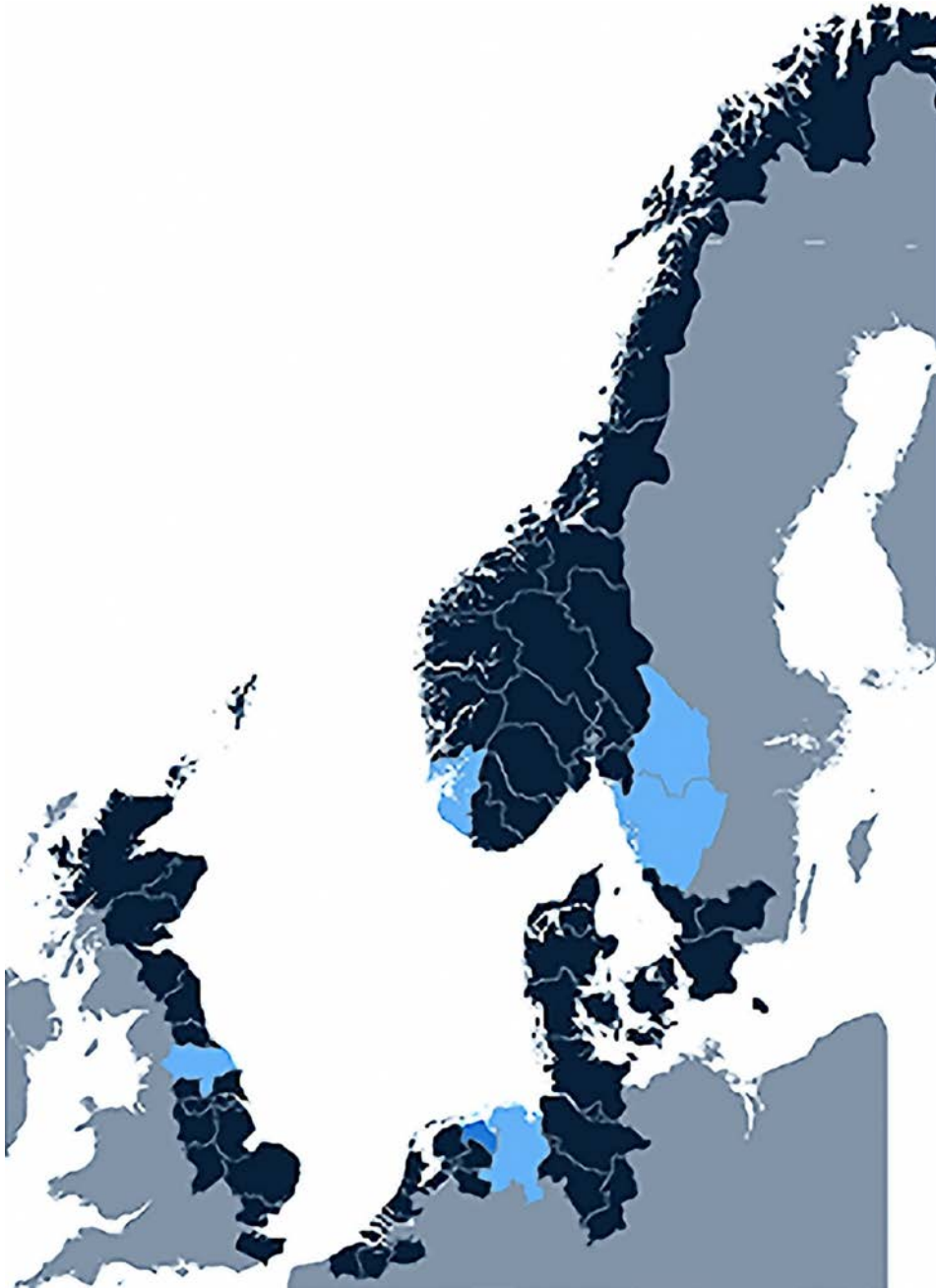
1 Introduction

Remote rural areas in Europe face many socioeconomic challenges, such as ageing, a declining workforce, declining service provision and a lack of connectivity, mobility and public transport (Woods, 2007; Haartsen and Venhorst, 2010). A possible solution to these challenges is to provide better digital connectivity to the remote rural areas (Townsend et al., 2013). Public transport is costly in these areas, and levels of provision are under pressure across rural Europe. A way to make public transport and, in fact, mobility as a whole more sustainable is to make use of the ‘digital potential’. However, these rural regions, most in need of improved digital connectivity to overcome their disadvantages, are poorly served when it comes to broadband and Next Generation Access networks (NGA). Interestingly, this is not only a problem for people living in the rural areas, but also for the urban population and businesses when they travel through areas or try to do business within them.

Rural areas are served last, if they are served at all (Salemink et al., forthcoming). The accumulation of remoteness, lack of economies of scale and a lack of new developments by the market, results in a ‘rural penalty’ (Malecki, 2003: 201). In other words, rural areas stand still, or even fall further behind, while metropolitan, urban and suburban areas are served increasingly well (Salemink and Bosworth, 2014).

This paper assesses the consequences of a lack of digital connectivity and accessibility for ICT-based transport and mobility solutions, with a focus on rural development. It combines literature on ‘analogue’ and digital accessibility, and pays specific attention to market mechanisms, and, as a result of these, the lack of service provision (Malecki, 2003: 201). Furthermore, it analyses the impact of the ITRACT project in reducing the negative consequences associated with a lack of transport services and service provision in general. Finally, we present recommendations for future policy and projects based on the insights and lessons learned from ITRACT.

ITRACT aimed at improving the accessibility of, and the mobility within, remote rural areas in two ways. Firstly, ICT-based services were designed and implemented to support existing public and private transport systems; for example, an online community for ride-sharing. Secondly, ICT applications were tested as a supplement to or replacement for the existing systems; for example, matching supply and demand for community transport initiatives, making a video call rather than a visit. The participating regions were Yorkshire Dales (UK), Oost-Groningen (NL), Ost-Friesland (DE), Värmlands län (SE) and Rogaland (NO) (Map 1).



Map 1: Participating regions in the North Sea Region: Yorkshire Dales, UK; Provincie Groningen, NL; Ost-Friesland, DE; Rogaland, NO; Värmlands län, SE

2 Accessibility, connectivity and mobility in the digital age

The accessibility of rural areas and their communities has been an issue since the second half of the twentieth century. The prevailing logic of centralized service provision means that some communities, especially those in remote rural areas, face limitations with respect to both market-based and publicly delivered services. Antrop (2005) has shown that accessibility is directly related to opportunities in a region. Moreover, the seminal work by Moseley, *ACCESSIBILITY: the rural challenge* (1979), proposed a further mobilization of services in order to overcome this distance, that is, putting services on wheels, such as mobile libraries and mobile shops. Thus, transport became crucial for both the movement of people (e.g. commuting to work) and the provision of services. However, with the rise of the internet and the importance of digital infrastructure, there is now a great potential to replace the need for the physical movement of people in rural areas, or to complement this through digital service delivery to households and businesses. To be able to do this, rural communities should have access to good-quality and future-proof digital infrastructure. Unfortunately, this is very often not the case, presenting remote rural areas – and the ITRACT project – with the contemporary challenge of addressing rural digital accessibility (Townsend et al., 2013; Saleminck and Bosworth, 2014).

From an economic perspective, the ongoing developments of the digital age and economy were expected to lead to new opportunities for rural areas due to the ‘death of distance’, which would eventually help to overcome the rural penalty (Castells, 2000; Townsend et al., 2013). Friedmann (2005) stated that ‘the world was flat’, meaning that geographical differences would diminish because of globalization and increasing digital connectedness (through ICTs) of places and people. Others rejected this thesis, claiming that globalization and increasing connectedness led to increasing differences between regions, with cities on the winning side and remote areas on the losing side (Florida, 2005, ‘the world is spiky’; McCann, 2008, ‘the world is curved, not flat’). Rather than concluding that digital connectedness and ICTs are the cause of the problem, this paper emphasizes that ICTs are at the heart of overcoming the economic and social inequalities between urban and rural areas. Compared to urban areas, rural areas have never been equally equipped to benefit from digital connectivity (Saleminck et al., forthcoming). This ‘urban-rural digital divide’ (Townsend et al., 2013) is an important aspect of the rural penalty, which prevents the world from becoming flat.

Map 2 shows the example of the Netherlands. The grey areas are (theoretically) well-served market areas for Next Generation Access (high-speed technologies such as fibre optics to the home), while the red areas are the underserved areas.

Overcoming the urban-rural digital divide, however, has proved to be complex. The potential, and yet the problem, of improved digital connectivity becomes especially clear in the case of transport and accessibility. Transport poverty is a persistent and, in some cases, growing problem in remote rural areas (Gray et al., 2006; Shergold and Parkhurst, 2012; Milbourne and Doheny, 2012). Increasing car ownership undermines demand thresholds for public transport provision, resulting in a deterioration in public transport provision and growing dependency on car mobility in rural communities (Gray et al., 2006: 96). Carless people, sometimes carless by choice, but more often due to material or physical hardship, are dependent either on others who own a car, or on public transport. However, riding along or ‘getting a lift’ is not always an option (and reciprocating is not often possible for those without cars), and public transport provision is under pressure. These circumstances lead to transport poverty and transport-related social exclusion (Shergold and Parkhurst, 2012).



Map 2: Broadband situation and urban-rural digital divide in the Netherlands: grey areas are well served, red areas are underserved (Salemink. 2014)

Accessibility and connectivity are not just about physical transport. In line with the ‘mobilities debate’, the debate on connectivity and accessibility recently shifted from physically moving people to enabling connectivity between people and their destinations (Osti, 2010; Urry, 2012; Kolodinsky et al., 2013). Enabling connectivity suggests that it is not always necessary to physically make a trip. Instead, one should be able to connect, either physically or digitally, to the required person, institution or service. Velaga et al. (2012) recognized the potential of digital connectivity in this context. However, due to a lack of digital connectivity in rural areas, people, businesses and institutions are restricted in developing and reorganizing their activities in a digital way, which maintains their physical distance, and thus their remoteness.

It is not just the availability of connections that presents a problem. The people who are already suffering or are most vulnerable to transport poverty, that is, those experiencing material hardship and lacking essential digital skills (Owen et al., 2012), are often limited in their abilities to use digital applications (Mariën and Van Audenhove, 2010; Hubers and Lyons, 2013). This means that digital progress is lacking most, precisely where it is most needed.

In summary, the great potential of digital connectivity and ICTs is widely recognized in science and policy, and people in remote rural areas have repeatedly demonstrated a demand and need for this. Moreover, mobility and public transport can considerably benefit from it; however, little progress has been made in improving connectivity (Salemink and Bosworth, 2014).

3 Improving rural digital connectivity: a 'minor' issue?

The issue of *scale* is important when dealing with the digital divide. On a European level, and even on a global level, the countries involved in ITRACT (the UK, the Netherlands, Germany, Norway and Sweden) are seen as advanced countries when it comes to ICT availability and usage (Salemink et al., forthcoming). A vast majority of people have access to broadband and use ICTs. However, the group of people who do not have access to broadband and ICTs and use them less regularly and extensively, mostly live in rural areas (Townsend et al., 2013). This means that on a European level, and even on a national level, the problem of a lack of digitalization might not be obvious, since the highly urbanized geography of the countries conceals the relatively small numbers affected in rural areas. However, in these rural areas, the problem is unmistakably persistent (Velaga et al., 2012; Townsend et al., 2013; Salemink, 2014).

Developments with respect to mobility and digital connectivity in rural areas have a great impact on people and places. The consequences for the rural economy, social inclusion, and personal wellbeing are becoming clearer through research (Jones and Lucas, 2012). Nowadays, the effects of a lack of digitalization in rural areas is becoming a key topic in different policy schemes at the regional, national and European levels (Velaga et al., 2012; Townsend et al., 2013; Salemink et al., forthcoming). However, a variety of governments, service providers and business are only responsible for specific aspects of the overall issue. This situation generates *fragmented mandates and sector-specific budgets, resulting in a fragmented approach* to improving digital connectivity in the rural, with little impact or no impact at all. It is commonly recognized in policy that a lack of digital connectivity is a problem, but no single institution has the power or the means to solve this.

This paper discusses such a *rural digital impasse*. It uses the ITRACT project to demonstrate the limitations of established institutions and authorities (such as local governments and public transport authorities) in resolving the integral issue of digital connectivity. Furthermore, it advocates a rural-based approach to deal with the market failures that lie behind poor digital connectivity.

4 Research approach and methodology

This paper applies a qualitative approach, in which five ITRACT project managers from the regional public transport authorities were interviewed: one from OV-bureau Groningen Drenthe (NL), one from DITA/Metro (UK), and three from Värmlandstrafik (SE). The project managers were asked to reflect on the extent to which they, or their organization, were able to design and implement new ICT-based mobility and transport services. The underlying and contextual factors regarding this were also discussed.

In addition to the interviews, observations were made during ITRACT project activities, such as project-partner meetings, online meetings, Service Innovation Workshops and Business Innovation Workshops. In total, we attended seven transnational partner meetings. We also attended a Service Innovation Workshop (UK) and two Business Innovation Workshops (Germany and the Netherlands).

These workshops were held in the participating regions, involving stakeholders from the public transport sector, local governmental organizations, local businesses and representatives of civic organizations. They were set up as focus group discussions aimed at defining new mobility services and corresponding business models. For more information on these methods, we refer to the Best Practice Guide on Transnational Business Models for ICT-based Transport Services (Viktoria Swedish ICT, 2015).

5 Restricted innovations: digitalization on the wrong side of the digital divide

5.1 Digitalizing accessibility in the regions

The main goal of ITRACT was to create ICT-based transport and mobility services for remote rural areas. The first step in the process of creating these was coming up with new ideas. In ITRACT's case, this occurred in regional Service Innovation Workshops and Business Innovation Workshops. These workshops showed that there is a need for ICT-based innovations in transport and mobility services, and that several stakeholders would like to contribute to the business cases for several services.

An important observation from the ITRACT workshops is that although many ideas were quite 'innovative' and ICT-minded, their implementation often proved to be unfeasible due to inadequate data infrastructure (including mobile) in the remote rural areas. This was especially the case with services that were designed to improve the mobility of people in remote rural areas, such as community transport initiatives which require digital platforms to match supply and demand. To ensure a continuous matching process, internet connections have to be reliable and operate at least at a minimum workable speed.

The success of ICT services for older people, an important target group within ITRACT, was limited. Many older people lack the skills and digital experience that are required for the effective use of digital applications. Furthermore, older people have often lived their lives with unquestioned dependence on the private car (Milbourne and Doheny, 2012). Some older people in rural areas lack the basic knowledge required for using bus services (Sociaal Planbureau/CMO Groningen, 2014); and quite often they are the same people who experience forms of social exclusion (Shergold and Parkhurst, 2012). The ITRACT application, 'Step by Step', assisted these people in becoming familiar with using the public transport system (tested in Groningen; see also Sociaal Planbureau/CMO Groningen, 2014).

Although user-empowerment was a prominent topic in various ITRACT workshops and applications, it seems that even more training and guidance is needed than was envisaged by the workshop participants (see also Sociaal Planbureau Groningen/CMO Groningen, 2014). This demonstrates the importance of involving citizens at an early stage of the design process to adequately determine the needs of the target group – this was not the case in ITRACT.

5.2 Digitalizing the public transport authorities

Another form of empowerment that took place in ITRACT concerned the participating organizations. In the interviews, project managers from the regional public transport authorities explained that ITRACT offered learning experiences in commissioning and managing IT projects. As a client in an ICT innovation project, the regional partners were forced to reflect on their ICT readiness and ‘data maturity’ (see also Viktoria Swedish ICT, 2014).

Furthermore, the innovation workshops forced the regional authorities to reconsider their role in the region. Due to ongoing digitalization in society in general, the customer-business relationship is changing rapidly. Many ideas in ITRACT aimed at dealing with this change. However, the regional partners experienced the difficulties come with ‘digitalizing rural service provision’, considering the poor digital infrastructure and lack of adoption. All of the interviewees claimed that their organization was forced to think differently about their relationship with the customer and their role in the region. They also expected they would continue to do this in the future.

5.3 ITRACT: Two major challenges and their consequences

The experience gained from the attempts to implement novel ICT services in ITRACT pilot projects mirrors findings in academic literature that suggest that digitalization is problematic in remote rural areas. Based on the findings from ITRACT and this literature (see also Salemink et al., forthcoming), two main challenges were discerned:

1. *Poor digital infrastructure*, such as fixed and mobile broadband. Rural areas are underserved when it comes to digital technologies. ITRACT pilot studies demonstrated that these infrastructure restrictions limit the potential for social and economic development in remote rural areas. Innovative ideas are often not developed further because they are considered impracticable. A novel, but at the same time obvious, insight from the ITRACT project is that the poor digital infrastructure affects not only the rural residents but also *everyone who travels to or through the rural* (see also the ITRACT regional development report ‘Regional Development and Connectivity: A Digital Perspective’ by Salemink and Strijker, 2015). This insight highlights the fact that improved digital connectivity in the rural context (both fixed WiFi availability and mobile for travel) will *benefit a much larger group than merely the remote rural residents*. This makes people who travel to or through the rural – such as

commuters, business people, doctors and vets, and maintenance engineers for industry and agriculture – stakeholders in digital rural development. It is also in their interests to improve rural connectivity. Larger scale or more stakeholders or interest groups could assist in creating business cases for improving digital infrastructure, and also digital services, as developed in ITRACT (see also Viktoria Swedish ICT, 2015).

2. *Lack of adoption of new technologies and applications.* New digital machinery, such as tablets and smartphones, are adopted later and less often in rural areas compared to urban areas (Salemink and Strijker, 2015). While some people stated that they did not own such equipment because of their low income, more often the reason for non-adoption can be found in a lack of skills or previous experience with digital applications. According to one participant in an SIW: ‘If you’ve never had it, you can’t miss it’ (Service Innovation Workshop DITA/Metro, Ripon, Yorkshire Dales, UK, 19 November 2012). The lack of, or at least later, adoption of technologies in rural areas presents ICT-based innovation projects with a challenge. How can we ensure effective use of new ICT applications if the adoption rates are low? Findings from ITRACT (Salemink and Strijker, 2015; Viktoria Swedish ICT, 2014) and other research projects (Hage et al., 2013) show that the accessible introduction of ICTs into the everyday lives of late or non-adopters (e.g. older people) is an essential first step towards further digital engagement. This should be the starting point of promoting digital engagement and inclusion.

Both the inadequate availability and lack of adoption of ICTs lead to the limited use of digital technologies and applications. For these reasons, remote rural communities are limited in their abilities to participate in the digital information society. More importantly to ITRACT, ICT-based innovations for transport and mobility services are constrained as a result.

These issues cannot be resolved by the regional partners and stakeholders in the project. As a consequence, participating organizations tend to look towards urban and semi-rural areas for the introduction of ICT solutions, in an attempt to achieve quick wins or ‘just make the most of it’ (interview with project manager from OV-bureau Groningen Drenthe). By focusing on urban and semi-rural areas, the differences in connectivity and accessibility between urban and rural areas increase. Since many regions that are classified as rural include urban and semi-urban areas, such as market

towns and small cities, such project activities still appear to be aimed at ‘the rural’. Even though this seems merely a semantic point, it shows that the focus of projects can easily shift from ‘remote rural’ to ‘market towns’ and other better served areas, which can increase the differences between the well and the underserved areas.

6 Integral and focused: rescaling ‘the rural’ as a solution to fragmented rural interest

One of the key insights from ITRACT is that the regions which are most in need of the benefits of digitalization and novel ICT solutions, that is, rural areas, are poorly equipped to actually do so. This exacerbates the impact of remoteness on these rural areas. A comprehensive solution to poor digital connectivity and mobility poverty in remote rural areas transcends both sectorial and institutional responsibilities and capabilities.

On the policy level, we have described two major challenges: poor digital infrastructure and a lack of adoption of new technologies and applications. The first challenge can be addressed by providing a supply-side boost. To enable ICT-based innovations, investment in telecommunications networks must be stimulated. As a first step, demand for ICT infrastructure, often scattered and fragmented in the rural context, should be bundled. The second step should be to find match-funding to overcome the ‘investment gap’, as the lack of balanced business cases requires compensation through external funding. Since market formation is lacking in rural areas (so-called ‘white areas’; European Commission, 2012), government funding is allowed. For digital inclusion projects which address the second challenge, the traditional approach, that is, providing devices and applications, has proved to be insufficient. One solution might be to move towards an integral user-empowerment scheme, targeted at different groups and offering an accessible introduction to ICTs. Moreover, such target group schemes should enable people to discover their own ICT-related interests, as personal drivers are key factors in becoming digitally engaged, involved and included. User-empowerment schemes should thus provide the opportunity to explore what works for an individual.

On the project level, the co-presence of (semi)urban areas within a defined region, for example NUTS regions, can lead to a misrepresentation of the nature of the problem in rural communities. Subsequently, such a misrepresentation can result in a shift of the policy focus. Rural-based approaches using integral projects and alliances that have a smaller scope, but a larger domain, could offer better solutions. In other words, projects should focus merely on the remote rural with a mandate from the stakeholders involved in that area. In this way, organizations and authorities, which are often urban-based, will be forced to think from the perspective of the rural context

and focus their project efforts on a specific area. In Box 1 we discuss the example of the Dales Integrated Transport Alliance (DITA), a partner in ITRACT and a community-led group serving the remote rural area of the Yorkshire Dales.

This *rural-based approach* requires governments to open their current system of governance to an alternative approach. Current reforms to European Cohesion Policies, emphasizing a crucial role for *community-led local development* (CLLD), present us with an opportunity to encourage governments to move in this direction, and approach rural issues in a more focused and comprehensive manner. Furthermore, a community-led approach makes local knowledge more accessible. Such knowledge can in turn assist in setting policy priorities, matching supply and demand, and ultimately optimizing transport and mobility service delivery in a socially, economically and environmentally sustainable way.

With economic policies becoming ever more urban-led, including the EU Cohesion Policy, it is essential for rural stakeholders to join forces and work towards a rural community-led development scheme in their region. Rural communities should be able to define their own needs, whether these are directly transport related, economic, social, cultural or environmental. Institutional rural stakeholders should facilitate developments which contribute to fulfilling these needs. In this way, rural communities can take charge of the task of overcoming ‘the rural penalty’ that they face due to a lack of market involvement.

Box 1: Example of Dales Integrated Transport Alliance (DITA) (bold formatting added)

The Dales Integrated Transport Alliance (DITA) is a **community-led group of individuals and organizations** who want to improve transport in the rural area of the Yorkshire Dales National Park and Nidderdale Area of Outstanding Natural Beauty. DITA's vision is to ensure that a sustainable transport network is provided throughout the Dales area (largely remote rural national park area), to provide visitors and residents alike with access to facilities, while minimizing carbon emissions and boosting the economy.

DITA **works in partnership** with North Yorkshire County Council (NYCC), West Yorkshire Combined Authority (WYCA), Yorkshire Dales National Park Authority (YDNPA), as well as parish and town councils, businesses, community groups and others who have an interest in the work we are doing.

DITA is currently funded principally by the Department for Transport (DfT), having been awarded funding under the Local Sustainable Transport Fund in July 2011. This funding runs until March 2015. DITA has three strategic priorities:



Transport service development

Development and support of Your Dales Hubs

Young people (different from other ITRACT partner regions)

DITA has been working **with local communities** to set up ten Hubs across the Dales. These provide residents and visitors with comprehensive travel information, as well as facilities to plan and book journeys. Hubs can be accessed in person, or via the phone. Hubs have been established in Sedbergh, Settle, Grassington (2), Pateley Bridge, Masham, Leyburn, Reeth and Hawes (2).

DITA has also commissioned pilot evening and Sunday bus services on several routes, and has supported the development of the Sunday DalesBus network, especially in Wensleydale, leading to a considerable increase in passenger numbers. DITA has also supported the development of community transport operations in Reeth, Hawes, Pateley Bridge, Grassington and Sedbergh.

DITA is working with young people, and has commissioned two projects to be undertaken in schools. It runs the successful One Way £1 fare scheme for young people, available to anyone aged under 19 for evening and weekend bus journeys in the Dales, and at any time during school holidays. This scheme has led to around a 60% increase in child passenger numbers in the two years since it was launched. DITA is hopeful that the participating operators will continue the One Way £1 scheme without further subsidy after DITA's funding period ends.

Working with Yorkshire Dales National Park Authority, DITA has funded improvements to two popular footpaths to make them accessible to all, including wheelchair users.

DITA has also funded projects with the Wensleydale Railway to enable it to extend their operations to Northallerton, **providing a new transport link between the county town of North Yorkshire and towns and villages in Wensleydale** (providing mobility from and through rural areas).

Working alongside the ITRACT project, DITA have supported the installation of bus real-time information displays at two Your Dales Hubs and Ticketer Machines on buses throughout the Dales to enable the buses to provide real-time information, and have supported the development of the ShareRoute journey planner and trip-booking software.

More information on DITA and the work that is being undertaken can be found at www.dalesconnect.net.

7 References

- Antrop, M. (2005), 'Why landscapes of the past are important for the future'. *Landscape and Urban Planning*, vol. 70, issues 1-2, pp. 21-34
- Castells, M. (2000) 'Materials for an exploratory theory of the network society', *British Journal of Sociology*, vol. 51, no. 1, pp. 5-24
- European Commission (2012) *Communication from the Commission to the European Parliament, The Council, The European Economic and Social Committee and the Committee of Regions – The Digital Agenda for Europe: Driving European growth*, version 18-12-2012, Brussels
- Florida, R. (2005) 'The World is Spiky', *The Atlantic Monthly*, October issue
- Friedman, T.L. (2005) *The World is Flat: A Brief History of the Twenty-First Century*, 1st edn. Picador, New York
- Gray, D., Shaw, J., Farrington, J. (2006) 'Community transport, social capital and social exclusion in rural areas', *Area*, vol. 38 (1), pp. 89-98
- Haartsen, T., Venhorst, V. (2010) 'Planning for decline: Anticipating on population decline in the Netherlands', *Tijdschrift voor Economische en Sociale Geografie*, vol. 101, no. 2, pp. 218-227
- Hage, E., Roo, J., Van Offenbeek, M., Boonstra, A. (2013) 'Implementation factors and their effect on e-Health service adoption in rural communities: a systematic literature review', *BMC Health Services Research*, vol. 13, no. 19, pp. 1-16
- Hubers, C., Lyons, G. (2013) 'New technologies for old: Potential implications of living in later life for travel demand', *Transport Policy*, vol. 30, pp. 220-228
- Jones, P., Lucas, K. (2012) 'The social consequences of transport decision-making: clarifying concepts, synthesizing knowledge and assessing implications', *Journal of Transport Geography*, vol. 21, pp. 4-16
- Kolodinsky, J.M., DeSisto, T.P., Prosen, D., Putnam, M.E., Roche, E., Sawyer, W.R. (2013) 'It is not how far you go, it is whether you can get there: modeling the effects of mobility on quality of life in rural New England', *Journal of Transport Geography*, vol. 31, pp. 113-122
- Malecki, E.J. (2003) 'Digital development in rural areas: potentials and pitfalls', *Journal of Rural Studies*, vol. 19, pp. 201-214
- Mariën, I. & Van Audenhove, L. (2010) *Embedding e-inclusion initiatives in people's daily reality: the role of social networks in tackling the digital divide*, IBBT-SMIT, Studies on Media, Information & Telecommunication, Brussels
- McCann, P. (2008) 'Globalization and economic geography: the world is curved, not flat', *Cambridge Journal of Regions, Economy and Society*, vol. 1, no. 3, pp. 351-370

- Milbourne, P., Doheny, S. (2012) 'Older people and poverty in rural Britain: Material hardships, cultural denials and social inclusions', *Journal of Rural Studies*, vol. 28, pp. 389-397
- Moseley, M.J. (1979) *Accessibility: the rural challenge*, 1st edn. Methuen & Co Ltd, London
- Owen, D., Hogarth, T., Green, A.E. (2012) 'Skills, transport and economic development: evidence from a rural area in England', *Journal of Transport Geography*, vol. 21, pp. 80-92
- Osti, G. (2010) 'Mobility Demands and Participation in Remote Rural Areas', *Sociologia Ruralis*, vol. 50, no. 3, pp. 296-310
- Salemink, K. (2014) *Breedband in buitengebieden*, Factsheet, RUG-FRW, Groningen
- Salemink, K., Strijker, D. (2012) *Breedband op het platteland: Rapportage voor Woon- en Leefbaarheidsbasisplan Oost-Groningen*, RUG-FRW, Groningen
- Salemink, K., Strijker, D. (2015) *Regional Development and Connectivity: A Digital Perspective*, regional development report for ITRACT, RUG-FRW, Groningen
- Salemink, K., Bosworth, G. (2014) 'Investigating community-led broadband initiatives as a model for neo-endogenous development', Conference paper presented at 12th Rural Entrepreneurship Conference, Harper Adams University, Newport, UK, online: https://cdn.harper-adams.ac.uk/document/page/153_Salemink--Bosworth---Community-led-broadband.pdf
- Salemink, K., Strijker, D., Bosworth, G. (forthcoming) 'Rural Development in the Digital Age: a systematic literature review on unequal ICT availability, adoption, and use in rural areas', revised and resubmitted to an international journal
- Shergold, I., Parkhurst, G. (2012) 'Transport-related social exclusion amongst older people in rural Southwest England and Wales', *Journal of Rural Studies*, vol. 28, pp. 412-421
- Sociaal Planbureau Groningen/CMO Groningen (2014) *Mobility of the elderly through ICT support*, commissioned by OV-bureau Groningen Drenthe for ITRACT, published in Groningen
- Townsend, L., Sathiaselan, A., Fairhurst, G., Wallace, C. (2013) 'Enhanced broadband access as a solution to the social and economic problems of the rural digital divide', *Local Economy*, vol. 28, no. 6, pp. 580-595
- Urry, J. (2012) 'Social networks, mobile lives and social inequalities', *Journal of Rural Studies*, vol. 28, pp. 24-30

Velaga, N.R., Beecroft, M., Nelson, J.D., Corsar, D., Edwards, P. (2012) 'Transport poverty meets the digital divide: accessibility and connectivity in rural communities', *Journal of Transport Geography*, vol. 21, pp. 102-112

Viktoria Swedish ICT (2014) Best Practice Transnational Business Models for ICT-based Transport Services, based on the service and business development work package of ITRACT, published in Stockholm

Woods, M. (2007) 'Engaging the Global Countryside', *Progress in Human Geography*, vol. 31, no. 4, pp. 485-507

Attended ITRACT meetings

Kick-off Meeting at Hanze UAS Groningen, NL, 19-20 January 2012

Transnational Partner Meeting at Viktoria Institute Gothenburg, SE, 7-8 June 2012

Transnational Partner Meeting at University of Stavanger, NO, 29-30 November 2012

Transnational Partner Meeting in Skipton, UK, 5 June 2013

ITRACT Midterm Conference in Skipton, UK, 6-7 June 2013

Transnational Partner Meeting at University of Karlstad, SE, 28-29 November 2013

Transnational Partner Meeting at Jade UAS Oldenburg, DE, 22-23 May 2014

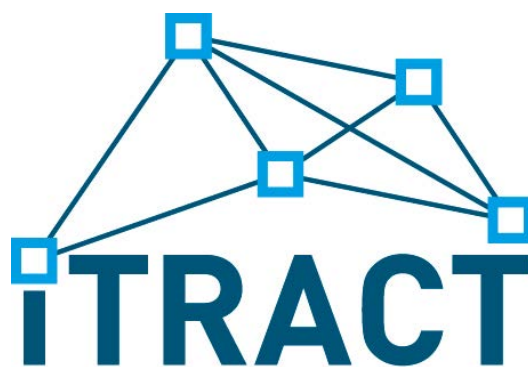
Transnational Partner Meeting at University of Groningen, 13-14 November 2014

Attended ITRACT Workshops

Service Innovation Workshop DITA/Metro, Ripon, Yorkshire Dales, UK, 19 November 2012

Business Innovation Workshop OV-bureau Groningen Drenthe, Midwolda, Groningen, NL, 17 September 2013

Business Innovation Workshop VEJ, Wilhelmshaven, Ems-Jade, Germany, 21 January 2014



Improving Transport and
Accessibility through new
Communication Technologies

www.itract-project.eu

Contact

University of Groningen

Prof. Dr. Dirk Strijker

Phone: +31 50 3633726

E-mail: d.strijker@rug.nl

www.rug.nl

Koen Salemink MSC

Phone: + 31 654681911

E-mail: k.salemink@rug.nl

Lead Beneficiary

Hanze University of Applied Sciences

www.hanze.nl

Drs. Theo Miljoen

Phone: +31 683 099 791

E-mail: t.a.miljoen@pl.hanze.nl